

Health System Sustainability Regulations and Opportunities

Matthew J. Meyer, MD

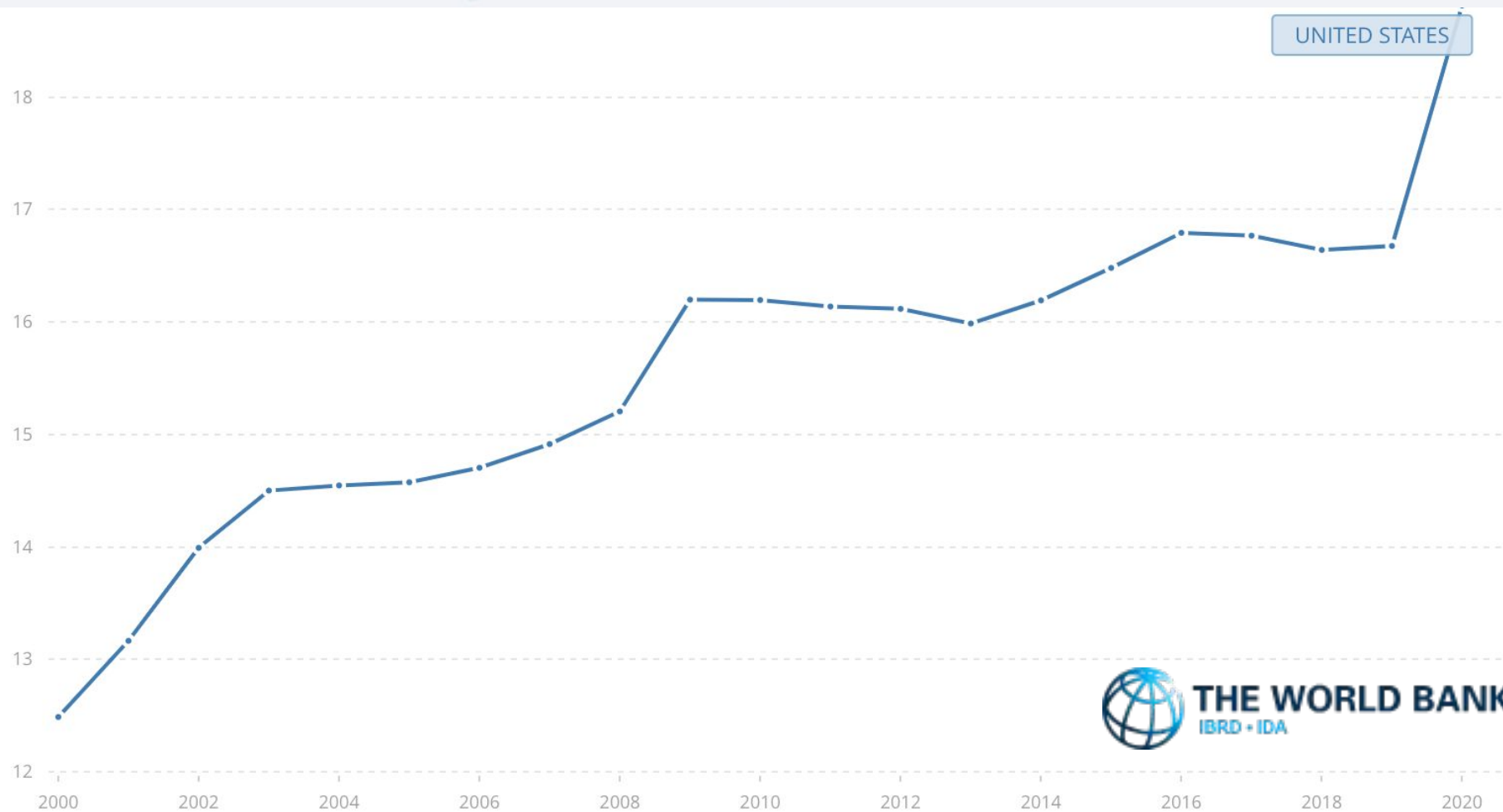
Associate Professor of Anesthesiology at the University of Virginia
UVA Health Sustainability Committee (Co-Chair)

University of Virginia Committee on Sustainability (Member)

Virginia Clinicians for Climate Action Steering-Committee

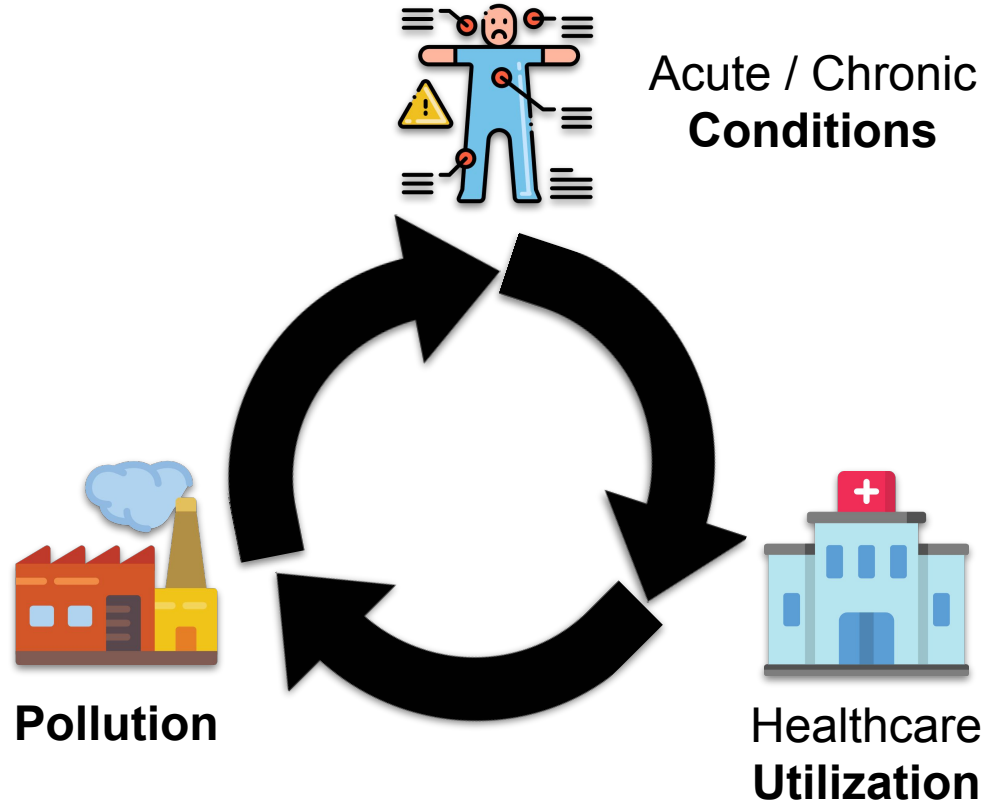
mmeyer@virginia.edu

Current health expenditure (% of GDP) - United States



THE WORLD BANK
IBRD • IDA

Healthcare's Vicious Cycle



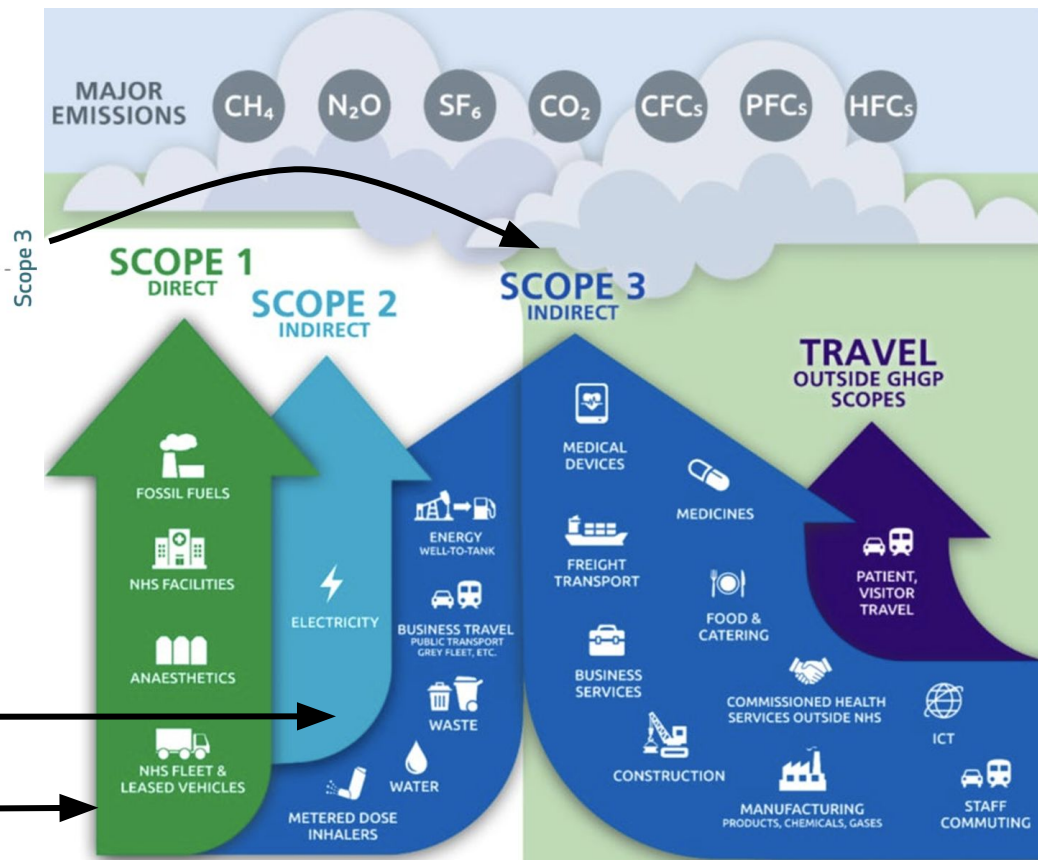
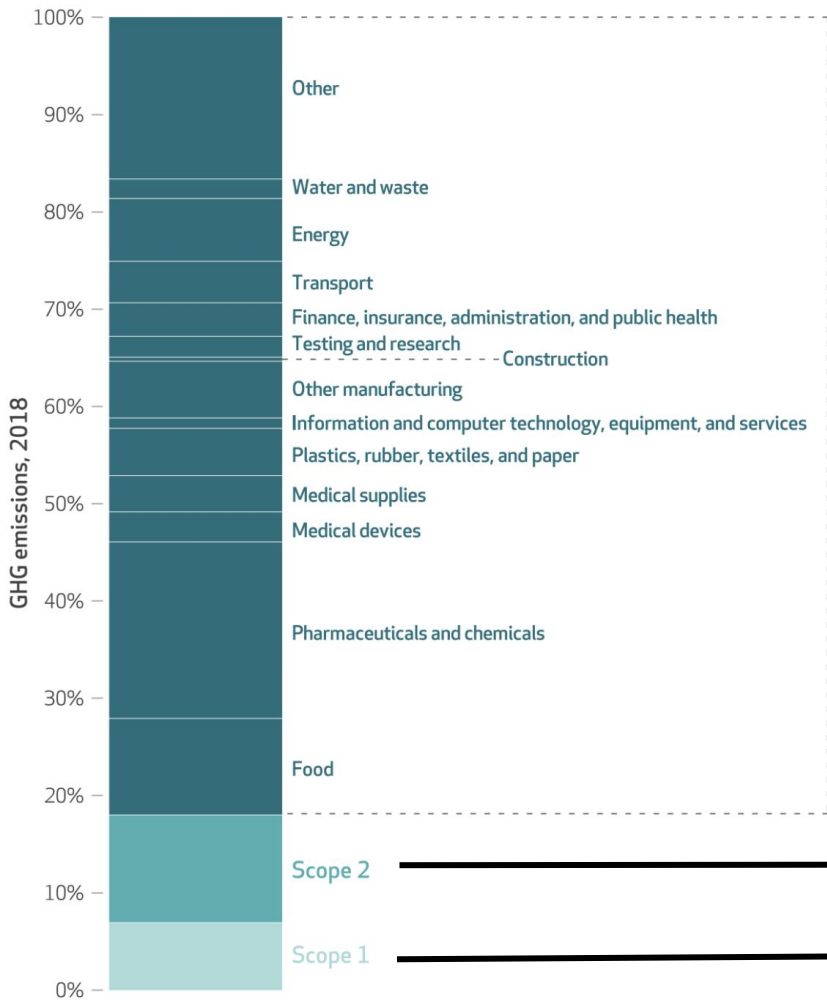
By Matthew J. Eckelman, Kaixin Huang, Robert Lagasse, Emily Senay, Robert Dubrow, and Jodi D. Sherman

Health Care Pollution And Public Health Damage In The United States: An Update

DOI: 10.1377/hlthaff.2020.01247
HEALTH AFFAIRS 39,
NO. 12 (2020): 2071–2079
©2020 Project HOPE—
The People-to-People Health
Foundation, Inc.

Healthcare Emissions (CO ₂ e)	% of National Emissions	Comparison
553 MTon	8.5%	Indonesia (2018)

US national health care greenhouse gas (GHG) emissions by GHG Protocol Scope, 2018



2009

386

Climate change
is the biggest
global health
threat of the 21st
century

2015

400

Climate change is
the greatest threat
to global public
health in the 21st
century

If your solution doesn't have a disposable, try to reengineer it so it does

UCSF Lean Launchpad For Life Science and Healthcare Startups

Medical Device Track

Class 5

Revenue Models

October 29, 2013

Allan May

Chairman, Life Science Angels

amay@lifescienceangels.com

4. **RAZOR/RAZOR BLADE MEDICAL DEVICE REVENUE** MODELS ☒ Recurring revenue is usually valued more highly by acquirers than one-time revenue ☒ Most medical devices either are a consumable or disposable or include one as part of the procedure kit ☒ Eg, Nanostim – Leadless cardiac pacemaker requires an insertion catheter, sheath, and removal catheter ☒ If your solution doesn't have a disposable, try to reengineer it so it does ☒ Eg, Cyberheart – Use of a stereotactic CyberKnife for structural heart did not have any disposables originally ☒ Determined that the procedure benefited by the insertion of fiducials to provide real-time visualization per procedure; then the fiducials are discarded UCSF Lean Launchpad - Allan May ©

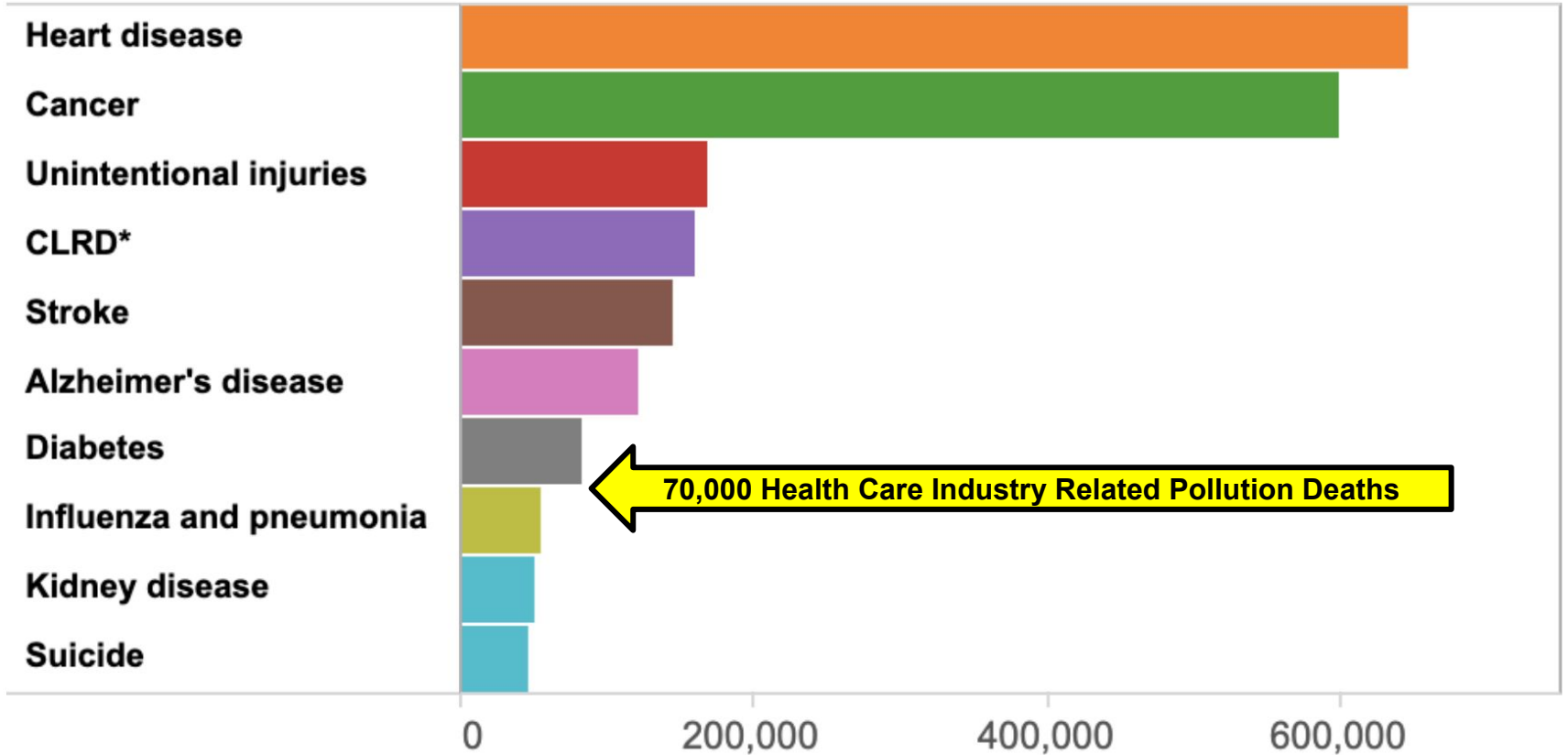
RESEARCH ARTICLE

Environmental Impacts of the U.S. Health Care System and Effects on Public Health

Matthew J. Eckelman^{1*}, Jodi Sherman²

We **estimate emissions directly and indirectly attributable to the health care sector**, and potential harmful effects on public health...These indirect health burdens are **commensurate with the 44,000–98,000 people who die** in hospitals each year in the U.S. as a result of preventable medical errors...

Leading Causes of Death in US (2017)



70,000 Health Care Industry Related Pollution Deaths



2009

386

Climate change is the biggest global health threat of the 21st century



2015

400

Climate change is the greatest threat to global public health in the 21st century

200+ Medical Journals



2021

415

The greatest threat to global public health is the **continued failure of world leaders to keep the global temperature rise below 1.5°C** and to restore nature

THE LANCET

Medicare Program: Hospital Inpatient Prospective Payment Systems for Acute Care Hospitals and the Long Term Care Hospital Prospective Payment System and Policy Changes and Fiscal Year 2023 Rates; etc.



Posted by the **Centers for Medicare&Medicaid Services** on Aug 10, 2022

In summary, the organizations and individuals that submitted **comments almost uniformly embraced the importance of setting goals for reduced emissions and increased climate resilience** but also repeatedly requested the following:

- More **timely data to understand threats and health impacts associated with climate change**, especially for vulnerable and marginalized populations, as well as information on cost impacts for care providers.
- **Financing** supports and incentives to help deepen their work in this area (with attention to the needs of different provider types).
- Technical assistance tools to assist **operational and clinical improvements** in this area (with attention to frontline specialties whose work intersects with climate health).
- **Standardized measures and measurement frameworks** to help with progress tracking and reporting (with mixed views on whether such reporting be mandatory or voluntary).
- Updates to/simplification of **emergency preparedness requirements**, conditions of participation and other regulations to help all provider and supplier types to be more responsive to climate-related challenges.
- Attention to the challenges **different provider types**, already under strain from the pandemic, must address to take on this work and ensure no compromise in the quality of care delivery.
- Attention to the importance of **engaging supply chain stakeholders** in order to fully address the challenge of reducing emissions.

Proposed Requirements Related to Environmental Sustainability Hospital Program (HAP)

LD.05.01.01

1 **The hospital decreases greenhouse gas emissions and waste.**

Elements of Performance (EPs) for LD.05.01.01

- 2 **1. The hospital leaders designate an individual(s) responsible for the oversight of**
3 **activities to reduce greenhouse gas emissions in coordination with clinical and**
4 **facility representatives.**
- 5 **2. The hospital measures three or more of the following:**
6 **- energy use**
7 **- purchased energy (electricity and steam)**
8 **- anesthetic gas use**
9 **- pressurized metered dose inhaler use**
10 **- fleet vehicle gasoline consumption**
11 **- solid waste disposal to landfills or through incineration**
- 12 **3. The hospital develops written goals and action plans to reduce greenhouse gas**
13 **emissions in three or more areas that they have measured.**
- 14 **4. At least annually, the hospital analyzes its sustainability measures (EP 2) to**
15 **determine whether it is meeting its goal(s) and revises its plan (EP 3) if goals**
16 **are not achieved or sustained.**

Extra credit?

Proposed Requirements Related to Environmental Sustainability Hospital Program (HAP)

LD.05.01.01

- 1 **The hospital decreases greenhouse gas emissions and waste.**

Elements of Performance (EPs) for LD.05.01.01

HEALTH AFFAIRS FOREFRONT

RELATED TOPICS:

SYSTEMS OF CARE | PUBLIC HEALTH | PATIENT CARE | GLOBAL CLIMATE CHANGE | HEALTH CARE PROVIDERS
| REGULATION

US Healthcare Sector Can Decarbonize,
Reduce Waste, And Improve Public
Health With Thoughtful Regulation

[Matthew Meyer](#)

MAY 24, 2023

10.1377/forefront.20230519.772435



- 14
- 15
- 16
4. **At least annually, the hospital analyzes its sustainability measures (EP 2) to determine whether it is meeting its goal(s) and revises its plan (EP 3) if goals are not achieved or sustained.**

Figure 1. Summary of Key Measures and Strategies for Healthcare Decarbonization



HIGH-LEVEL AIM

Reduce organizational emissions by 50% by 2030 and to net zero by 2050

	High-Priority Measures		Key Strategies	
	Core Measures	Elective Measures	Reduce Waste	Reduce Emissions Intensity
Energy	<ul style="list-style-type: none"> Total GHG emissions from energy use 	<ul style="list-style-type: none"> Energy use intensity of health care facilities ENERGY STAR® score of health care facilities 	<ul style="list-style-type: none"> Conserve and optimize energy efficiency 	<ul style="list-style-type: none"> Transition to zero-carbon fuel sources Meet and exceed the current green building/retrofitting standards
Transportation	<ul style="list-style-type: none"> Total GHG emissions of owned and leased vehicles 	<ul style="list-style-type: none"> Total GHG emissions from staff and patient travel 	<ul style="list-style-type: none"> Centralize oversight to actively manage transportation reduction 	<ul style="list-style-type: none"> Transition to sustainable transportation systems
Anesthetic Gas	<ul style="list-style-type: none"> Total GHG emissions from inhaled anesthetics 	<ul style="list-style-type: none"> Mean fresh gas flow rates 	<ul style="list-style-type: none"> Minimize fresh gas flow rates Decommission or avoid construction of central nitrous oxide piping 	<ul style="list-style-type: none"> Manage anesthetic choices
Pharmaceuticals & Chemicals	<p>Overarching Scope 3 Measure:</p> <ul style="list-style-type: none"> Total GHG emissions from (or total spend on) goods and services 	<ul style="list-style-type: none"> Metered-dose inhaler outpatient prescriptions as a percentage of all inhaler prescriptions 	<ul style="list-style-type: none"> Prevent disease exacerbation Launch appropriate use campaigns 	<ul style="list-style-type: none"> Maximize lower carbon alternatives for inhalers
Medical Devices & Supplies		<ul style="list-style-type: none"> Percent purchased goods and services supplied by companies performing carbon disclosures with a science-based target for emissions reduction 	<ul style="list-style-type: none"> Ensure resource stewardship 	<ul style="list-style-type: none"> Adopt and expand circular economy policies and practices related to reuse, reprocessing, repair, repurposing, and recycling Adopt preferential purchasing with suppliers or service providers that perform carbon disclosures and have set a science-based target for decarbonization
Food		<ul style="list-style-type: none"> Total GHG emissions from food procurement 	<ul style="list-style-type: none"> Adopt food waste prevention and diversion programs 	<ul style="list-style-type: none"> Design plant-forward menus and retail options

AHRQ Announces Interest in Research on Climate Change and Healthcare

Notice Number:

NOT-HS-23-006

Measuring & Reducing Carbon Footprint

- What practice & policy interventions are most effective and efficient in reducing the carbon footprint of healthcare organizations and the healthcare supply chain?
- What measures best capture healthcare organizations' carbon footprints in a way that's comparable for purposes of reporting and benchmarking, in particular for Scope 3 emissions?
- How can healthcare organizations move to a more circular economy that emphasizes environmentally-friendly purchasing, re-use, and waste reduction?

Increasing Resilience

- What measures of organizations and communities best predict healthcare organizations' resilience in the face of extreme weather events and other climate-related issues such as supply chain disruption?
- What infrastructure, technology and actions are associated with increased resilience?
- What are the most promising resilience practices to scale up?

Addressing Equity

- How can healthcare organizations and providers use data to identify vulnerable patients and climate-related health threats?
- What are the most effective ways for healthcare providers to engage with patients and communities around climate issues in order to prepare for and respond to threats?
- How can healthcare organizations address historic and structural racism and other inequities in their climate and environmental activities?

AHRQ Announces Interest in Research on Climate Change and Healthcare

Notice Number:

NOT-HS-23-006



Measuring & Reducing Carbon Footprint

- What practice & policy interventions are most effective and efficient in reducing the carbon footprint of healthcare organizations and the healthcare supply chain?
- ★ What measures best capture healthcare organizations' carbon footprints in a way that's comparable for purposes of reporting and benchmarking, in particular for Scope 3 emissions?
- How can healthcare organizations move to a more circular economy that emphasizes environmentally-friendly purchasing, re-use, and waste reduction?

37 billion tons GHG (global)

5.6 billion tons GHG (US)

Health sector is 8.5% US GHG

Scope 3 is 80% of US health sector GHG

US Scope 3 health sector emissions are
1% of global emissions

**US Health Sector Scope 3 Emissions
=
1% of Global eCO₂**

Matthew J. Meyer, MD

Associate Professor of Anesthesiology at the University of Virginia

UVA Health Sustainability Committee (Co-Chair)

University of Virginia Committee on Sustainability (Member)

Virginia Clinicians for Climate Action Steering-Committee

mmeyer@virginia.edu